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H. W. WILEY, Chief of Bureau.

THE FLUORESCENT TEST FOR MINERAL AND ROSIN OILS.

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The Outerbridge method¹ of detecting and estimating mineral and rosin oils in fatty oils, by taking advantage of the fact that the fluorescence, which is a property of some oils, is very much magnified by examining the oil in the light of an inclosed arc, introduces an entirely new method of oil testing. The author of this method has made the interesting discovery that samples of oil which in sunlight show no fluorescence, when examined by the light of an inclosed arc frequently show a very strong fluorescence. He further states that the examination of a large number of vegetable oils failed to show a trace of fluorescence in any of them, while all samples of heavy mineral and rosin oil, whether debloomed or not, show strong fluorescence in the proper light. Based upon this observation, he proposes to rapidly detect and determine mineral or rosin oil in fatty oils by matching the fluorescence of the oil under examination with that of a prepared set of standard mixtures.

Outerbridge's statement that fluorescence is very greatly magnified by making the observation in the light of an inclosed arc has been verified in this laboratory. In addition to the lights used by Outerbridge, the uviolet light was tried but found to be in no way equal to the inclosed arc, which is far superior for this purpose to any other source of light.

Fluorescence in an oil does not, however, prove the presence of mineral or rosin oil. Of the 16 samples of pure linseed oil furnished by committee D-1 of the American Society for Testing Materials. Nos. 3, 5, 6, 10, 12, 13, 14, and 16 showed no fluorescence. Nos. 1, 2, and 11 showed slight fluorescence, and Nos. 4, 7, 8, 9, and 15 showed

¹ A Novel Method of Detecting Mineral Oil and Rosin Oil in other Oils. By A. E. Outerbridge, jr. Proceedings, Fourteenth Meeting American Society for Testing Materials.

marked fluorescence. A number of samples of other fatty oils of known purity, some of which were cold-pressed from the seed in the Bureau of Chemistry, showed marked fluorescence, in some cases as marked as that of many pure mineral oils.

In order to test the delicacy of the method a sample of kerosene, which alone showed very strong fluorescence in the light of the arc, was mixed with linseed oil No. 3. This mixture, containing 1 per cent of kerosene, which could easily be detected by its odor, showed a slight fluorescence, but it was not so marked as that shown by linseed oil No. 4 without any addition of other oil. The pure linseed oil No. 3 was then heated to 300° C. and after cooling was found to be strongly fluorescent. The same development of strong fluorescence was observed in a sample of pure olive oil, which, before heating, showed no fluorescence. The examination of a number of turpentine demonstrated that while many of these samples show no fluorescence, some containing mineral oil also show none, and some samples of undoubted purity showed marked fluorescence. It appears, therefore, that while it is interesting to know that the inclosed arc is a very convenient means of strongly magnifying fluorescence, this fluorescence is not proof of the presence of mineral or rosin oil.

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